MATH 3720 Complex Analysis (3,3,0) (E)
Prerequisite: MATH 1111-2 Mathematical Analysis I & II
This course provides an up-to-date introduction to the basic theory of analytic functions of one complex variable. Residue Theorem and its applications to the evaluation of integrals and sums will be one of the main objectives. Also conformal mappings and their applications will be discussed.

MATH 3760 Abstract Algebra (3,3,0) (E)
Prerequisite: MATH 1120 Linear Algebra
This course covers some properties of groups, rings and fields. Permutations groups and polynomial rings are included. Application of permutation group on counting and application of finite field on error correcting code are included.

MATH 3805 Regression Analysis (3,3,0) (E)
Prerequisite: MATH 2206 Probability and Statistics, MATH 2207 Linear Algebra, or equivalent
This course aims to provide an understanding of the classical and modern regression analysis and techniques which are widely adopted in various areas such as business, finance, biology, and medicine. There have been great developments in the past decades such as nonlinear regression, robust regression, nonparametric and regression. With the help of a statistical package such as SAS, Matlab or R, students can analyse multivariate data by modern regression techniques without any difficulty.

MATH 3806 Multivariate Analysis and Data Mining Applications (3,3,0) (E)
Prerequisite: MATH 2206 Probability and Statistics or equivalent, MATH 2207 Linear Algebra
To provide an understanding of the classical multivariate analysis and modern techniques in data mining. Very often, observations in the social, life and natural sciences are multidimensional or very high dimensional. This kind of data sets can be analysed by techniques in multivariate analysis and/or data mining. With the help of statistical package, such as Matlab, students will learn how to treat real multivariate problems.

MATH 3807 Simulation (3,2,1) (E)
This course aims to introduce basic technique in computer simulation. Two computer software packages (one for continuous systems and one for discrete systems) will be taught. Various practical problems will be modeled, discussed, and simulated through computer simulation. Upon completion of this course, students should be able to simulate a wide range of practical problems in the daily life.

MATH 3815 Design and Analysis of Experiments (3,3,0) (E)
Prerequisite: MATH 3805 Regression Analysis
To provide an understanding of various kinds of experimental designs involving factorial and uniform designs as well as design for computer experiments. The experimental design has a long history and has been widely used in industry, agriculture, quality control, natural sciences and computer experiments. They can be applied to survey design as well. Therefore, they are useful in business and social sciences. The statistical package, SAS and UD4.0 will be used to support the lecture.

MATH 3816 Design and Analysis of Surveys (3,3,0) (E)
Prerequisite: MATH 2206 Probability and Statistics or equivalent
To provide students with a good understanding of survey operations, survey sampling methods and the corresponding analyses of data. Important points in questionnaire design will also be addressed in the course. Students will form teams to do course projects. On completion of the course, students should be able to design, carryout, and write reports based on a professional survey.

MATH 3817 Dynamic Programming and Inventory Models (3,3,0) (E)
Prerequisite: MATH 2207 Linear Algebra, MATH 2206 Probability and Statistics, MATH 3205 Linear and Integer Programming
This course introduces basic principles, classical models, popular algorithms and various applications in other fields of inventory management and dynamic programming.

MATH 3825 Life Insurance and Life Contingencies (3,3,0) (E)
Prerequisite: MATH 2206 Probability and Statistics or equivalent
To introduce the theory of life insurance and life contingencies with application to insurance problems. Students will learn some of the major issue in the field of actuaries.

MATH 3826 Markov Chain and Queuing Theory (3,3,0) (E)
Prerequisite: MATH 2207 Linear Algebra, MATH 2206 Probability and Statistics, MATH 3205 Linear and Integer Programming
This course introduces basic principles, classical models, popular algorithms and various applications in other fields of Queuing Theory and Markov Chain.

MATH 3827 Network Models (3,3,0) (E)
Prerequisite: MATH 2207 Linear Algebra, MATH 3205 Linear and Integer Programming
This course aims to introduce basic principles, classical models, popular algorithms and various applications in other fields of network programming.

MATH 3830 Numerical Linear Algebra (3,3,0) (E)
Prerequisite: MATH 1120 Linear Algebra, MATH 2140 Numerical Methods I
This course aims to provide a thorough discussion of the advanced topics and state of art development in numerical linear algebra. This subject emphasizes on both the theoretical analysis and the computer applications of numerical linear algebra in various areas.

MATH 3835 Quality Control and Management (3,3,0) (E)
Prerequisite: MATH 2206 Probability and Statistics
This course aims to equip students with a variety of modern statistical methods, such as control charts, acceptance sampling plans and capability analysis, for continuing quality and productivity improvement in the manufacturing industry and service industry. Students will develop the skills necessary to decide whether or not bulk delivered services and products are of acceptable quality, to investigate the suitability of a process for performance of a given task, and to identify opportunities for immediate performance improvement. Contemporary quality management systems such as total quality control and six-sigma will be introduced.

MATH 3840 Numerical Analysis of Delay Differential and Volterra Function Equations (3,3,0) (E)
Prerequisite: MATH 1120 Linear Algebra and MATH 2140 Numerical Methods I or consent of the instructor
This course will provide a thorough introduction to the numerical analysis and the computational solution of functional differential and integral equations with delay (or retarded) arrangements. Starting with a brief review of the basic theory of delay differential and more general Volterra functional equations, it will lead the students to the current "state of the art" in this very active area of numerical analysis.

MATH 3850 Optimization Theory and Techniques (3,3,0) (E)
Prerequisite: Year II or Year III standing, or consent of the instructor
This course aims to provide the fundamental theory and techniques in unconstrained and constrained optimization, to